

Amendment and Response
U.S.S.N.: 08/922,263
Page 12 of 18

Clean Copy of All Pending Claims

1. (Four times Amended) A method of generating light inside a mammalian body for a medical purpose, comprising the steps of:

placing at least a distal portion of an interventional device inside a mammalian body, the interventional device including a sonoluminescent light module; and generating a sonoluminescent light inside the body.

2-3. (Cancelled)

4. (Twice Amended) The method of claim 1, wherein the light module comprises an acoustic transducer and an acoustic conducting medium, the method further comprising the steps of:

providing electric pulses to the acoustic transducer, thereby causing the transducer to generate sound waves; and

focusing the generated sound waves in the acoustic conducting medium, thereby generating light.

5. (Twice Amended) The method of claim 4 wherein the acoustic conducting medium is disposed in a housing that is at least partly transparent to the light.

6. (Twice Amended) The method of claim 4 wherein the acoustic conducting medium is disposed in a housing having a distal end, the distal end being open for focusing sound waves in the tissue to generate the light.

7. (Twice Amended) The method of claim 4, further comprising using water as at least a part of the acoustic conducting medium.

8. (Twice Amended) The method of claim 4 wherein a solid substance or target on which sonoluminescent effect can be observed is used as at least a part of the acoustic conducting medium.

Amendment and Response
U.S.S.N.: 08/922,263
Page 13 of 48

9. (Amended) The method of claim 4 wherein the acoustic transducer comprises a piezoelectric element and a wave matching layer for generating sound waves.

10. (Amended) The method of claim 1 wherein the sonoluminescent light module is disposed near the distal portion of the interventional device.

11. (Amended) The method of claim 4, wherein the step of providing electric pulses comprises using a pulse generator in communication with the sonoluminescent light module through an electrical conduit positioned inside the interventional device.

12. (Twice Amended) The method of claim 5 wherein the interventional device has a distal end that serves as the housing.

13. (Cancelled)

14. (Twice Amended) The method of claim 1 further comprising the step of adjusting the position of the light module inside the interventional device.

15. (Amended) The method of claim 1, further comprising the step of filtering at least a portion of the generated light such that only light within a predetermined range of wavelengths is transmitted to a target.

16. (Cancelled)

17. (Twice Amended) The method of claim 1 wherein the sonoluminescent light generated comprises x-ray radiation.

18-19. (Cancelled)

20. (Thrice Amended) A method of generating light inside a mammalian body, comprising the steps of:

placing at least a distal portion of an interventional device inside a mammalian body, the distal device portion comprising an arc lamp;

Amendment and Response
U.S.S.N.: 08/922,263
Page 14 of 18

electrically connecting the arc lamp through a proximal end of the interventional device to an energy source; and

causing the arc lamp to generate an arc inside the body.

21. (Amended) The method of claim 20, wherein the arc lamp comprises a housing, and a first and a second electrode positioned inside the housing, the step of generating an arc comprising striking an arc between the first and second electrodes.

22. (Amended) The method of claim 21 wherein the first electrode has a hemispheric shape and is coated with a metal.

23. (Amended) The method of claim 21 wherein the second electrode is formed on an inner surface of the housing by flash metallization.

24. (Amended) The method of claim 21 wherein the first and the second electrodes are sealed inside the housing with a sintered metal and a seal material that yields under high pressure.

25. (Amended) The method of claim 24 wherein the sintered metal comprises copper wool.

26. (Twice Amended) The method of claim 21 wherein a distal end of the housing is dome shaped, the method further comprising the step of collecting and redirecting light generated by the arc lamp through the distal end of the housing.

27. (Amended) The method of claim 21 wherein a material for the housing comprises quartz.

28. (Amended) The method of claim 21, wherein the interventional device further comprises a feedback system and a light guide disposed adjacent a housing wall, the method further comprising the step of supplying a light output from the arc generated to the feedback system.

29. (Twice Amended) The method of claim 20 wherein the interventional device is selected from the group consisting of a catheter, an endoscope, a guide wire, a needle, and an introducer.

30. (Amended) The method of claim 21 wherein a distal end of the interventional device performs as the housing.

Amendment and Response
U.S.S.N.: 08/922,263
Page 15 of 18

31. (Cancelled)

32. (Four times Amended) A method of generating light inside a mammalian body, comprising the steps of:

.....
placing at least a distal portion of an interventional device inside a mammalian body, the distal device portion comprising a fluorescent light source, the light source comprising a rigid gas-containing tube;

electrically connecting the fluorescent light source through a proximal end of the interventional device to an energy source; and

causing the light source to generate a fluorescent light inside the body.

33. (Amended) The method of claim 32 wherein the fluorescent light source comprises a flash tube coated with a phosphorescent or a fluorescing material.

34. (Amended) The method of claim 32 wherein the fluorescent light source comprises an equipotential flash tube shaped to discharge uniformly.

35. (Amended) The method of claim 34 wherein the fluorescent light source further comprises a dielectric material surrounding the flash tube and a pair of electrodes disposed at opposite sides of the dielectric material.

36. (Twice Amended) The method of claim 32 wherein the interventional device is selected from the group consisting of a catheter, an endoscope, a guide wire, a needle, and an introducer.

37. (Twice Amended) The method of claim 32, wherein the interventional device further comprise a balloon catheter having a polymeric stent placed on an external surface of a balloon portion.

38. (Amended) The method of claim 37, further comprising the step of hardening the polymeric stent by irradiating the stent with the light generated by the fluorescent light source.

Amendment and Response
U.S.S.N.: 08/922,263
Page 16 of 18

39. (Twice Amended) The method of claim 38 wherein the polymeric stent comprises an ultraviolet curable epoxy or an adhesive material.

40. (Amended) The method of claim 32 wherein the fluorescent light source comprises:

a Gunn-effect diode for generating radio-frequency energy;

a dielectric resonator disposed adjacent the diode; and

a gas tube comprising a gaseous substance that fluoresce when subjected to RF energy.

41. (Thrice Amended) A method of generating light inside a mammalian body, comprising the steps of:

placing at least a distal portion of an interventional device inside a mammalian body, the distal device portion comprising a spark gap module;

electrically connecting the spark gap module through a proximal end of the interventional device to an energy source; and

causing the spark gap module to generate a spark inside the body.

42. (Amended) The method of claim 41 wherein the spark gap module comprises two electrodes, the step of generating a spark comprising positioning the two electrodes in relation to each other for generating a spark across a gap between the two electrodes.

43. (Amended) The method of claim 42, further comprising the step of sealing the two electrodes in a transparent housing.

44. (Amended) The method of claim 43 further comprising the step of disposing a filter at a distal end of the housing for enhancing a desired light output.

45-46. (Cancelled)

Amendment and Response
U.S.S.N.: 08/922,263
Page 17 of 48

47. (Four times Amended) A method of generating light inside a mammalian body, comprising the steps of:

placing at least a distal portion of an interventional device light inside a mammalian body, the distal device portion comprising an incandescent lamp, the incandescent lamp comprising a housing, a pair of electrodes inside the housing and an oxidizing filament connecting the pair of electrodes, the housing being filled with a pre-selected gas capable of generating light of a predetermined color;

electrically connecting the incandescent lamp through a proximal end of the interventional device to an energy source; and

causing the incandescent lamp to generate short duration, high intensity light waves of the predetermined color for a medical purpose.

48. (Amended) The method of claim 47 wherein the short duration comprises duration of less than 100 milliseconds.

49-51. (Canceled)

52. (Amended) The method of claim 41, wherein the interventional device is selected from the group consisting of a catheter, an endoscope, a guide wire, a needle, and an introducer.

53. (Amended) The method of claim 47, wherein the interventional device is selected from the group consisting of a catheter, an endoscope, a guide wire, a needle, and an introducer.

54-59 (Canceled).

60. The method of claim 4, wherein the light module further comprises a lens, the step of focusing the generated sound waves comprising placing the lens in a pathway of the generated sound waves.

61. The method of claim 60, wherein the lens is placed between the acoustic transducer and the acoustic conducting medium.

Amendment and Response
U.S.S.N.: 08/922,263
Page 18 of 18

62. The method of claim 4, wherein the light module comprises a housing that encloses the acoustic conducting medium, the step of focusing the generated sound waves comprising reflecting the generated sound wave off the housing.

63. The method of claim 9, wherein the piezoelectric material comprises lead zirconate-titanate.